MINNESOTA DEPARTMENT OF PUBLIC SAFETY

Alcohol and Gambling Enforcement

Bureau of Criminal Apprehension

Driver and Vehicle Services

Emergency Communication Networks

Homeland Security and Emergency Management

Minnesota State Patrol

Office of Communications

Office of Justice Programs

Office of Traffic Safety

State Fire Marshal

Emergency Communication Networks

445 Minnesota Street • Suite 137 • Saint Paul, Minnesota 55101-5137
Phone: 651.201.7547 • Fax: 651.296.2665 • TTY: 651.282.6555
www.ecn.state.mn.us

February 7, 2012

VIA ELECTRONIC DELIVERY

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: **PS Docket 11-153: In the Matter of Facilitating the Deployment of Text-to-9-1-1 and Other NG9-1-1 Applications**
PS Docket 10-255: Framework for Next-Generation 9-1-1 Deployment
FCC 11-134: NOTICE OF PROPOSED RULEMAKING

In accordance with the Commission's rules, the state of Minnesota, acting through its Division of Emergency Communication Networks, submits this filing regarding the above-captioned proceeding and the Commission's request for reply comments therein.

Minnesota supports the 9-1-1 industry's general consensus that proposed short-term text-to-9-1-1 solutions must be limited to the deaf and hard of hearing community, and that resources invested into such short-term solutions must be strictly limited to serving that community in particular.

Minnesota also supports the 9-1-1 industry's general consensus that any initiative to enable the general public to place non-voice-based requests for emergency assistance must be long-term in nature. Significant investments in short-term solutions will undermine the ultimate goal of enabling robust, multimedia NG9-1-1 services for emergency callers—future services that will include text as a matter of course.

Respectfully,

Jackie Mines

Jackie Mines, Director
Emergency Communication Networks

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the matter of	)	
	)	
Facilitating the deployment of Text-to-9-1-1 and Other Next-Generation 9-1-1 Applications	)	PS Docket No. 11-153
	)	
Framework for Next-Generation 9-1-1 Deployment	)	PS Docket No. 10-255
	)	

To: The Commission

REPLY COMMENTS OF THE STATE OF MINNESOTA

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1. **The industry general consensus is that multimedia RFEA, and specifically text-to-9-1-1, will allow the general public to utilize the tools they now employ for personal enjoyment and productivity to report emergencies and save lives.**

The general public is increasingly using multimedia devices to enhance productivity and personal enjoyment. For example, today an individual can, with relative ease, record full-motion video on a smartphone, upload it to a video service, and share it with the entire world only seconds later through social networks or free video services populated with user-generated content. The only party to which that individual cannot send the video, it would seem, is to a PSAP to report an emergency.

A critical first step towards supporting multimedia RFEA[1] is to enable the ability, through some means, to send text to a PSAP. Text to 9-1-1 will enable those who cannot make a voice call, such as the deaf and hard-of-hearing, or those for some reason otherwise unable to speak, to place an RFEA. As the Commission has noted,[2] most use cases cite multimedia in RFEA as supplemental to a primary voice call (such as sending an image of a

[1] "RFEA" to mean "request for emergency assistance", which is a generic term that includes a 9-1-1 call or any other means of requesting public safety help during an emergency by initiating a two-way session and communicating by means of some form of multimedia. *See* "Call", NENA master Glossary of 9-1-1 Terminology (Version 16, August 22 2011).

[2] *See* Facilitating the Deployment of Text-to-9-1-1 and Other Next Generation 9-1-1 Applications; Framework for Next Generation 9-1-1 Deployment at ¶24, PS Docket Nos. 11-153, 10-255, Notice of Proposed Rulemaking, 26 FCC Rcd 13615 (2011) ("NPRM").

suspect when reporting a robbery or an image of a burning building while reporting a fire), while text RFEA serve the unique role of serving as a primary means to place an RFEA.

As noted by Intrado, 29.7% of all US households are wireless-only households.[3] This figure is growing at a rate of 3.84% per year, and there are now more wireless phones in the United States than there are people.[4] Wireless phones, and now smartphones, have become the *de facto* user equipment in modern telecommunications. Just as the 9-1-1 industry took advantage of the public switched telephone network to enable reporting of emergencies from any telephone, it is now absolutely essential that the 9-1-1 industry take advantage of new means of reporting RFEA that are made possible by a modern, wireless, multimedia-driven society.

2. Evidence shows that text-to-9-1-1 is the best way to place an RFEA during a major incident or any period of heavy network congestion.

The University of Colorado Interdisciplinary Telecommunications Program ("ITP") presents compelling evidence that text-to-9-1-1 may provide significant benefits for those in disaster scenarios due to the relatively high reliability of SMS messages and the relatively low amount of network capacity required to deliver an SMS message. In its filing, the ITP notes that a typical telephone conversation occupies 110 seconds of cellular base radio channel time, while a typical text message conversation occupies approximately 6 seconds; therefore, a text message conversation is 18 times more efficient in terms of network resources consumed.[5]

Additionally, the ITP notes that an already-acknowledged major incident would only require two messages for each call; one to the PSAP to send an REFEA, and the other from the PSAP acknowledging the incident. Such an approach could conserve network capacity, but more importantly, call-taker availability, to free callers to focus on meaningful unique cases that may be associated with an incident.[6] In this case, minor incidents that generate a disproportionate number of 9-1-1 calls (e.g., a car wreck on a busy freeway) may be handled quickly and efficiently without substantially disrupting normal PSAP activity. Meanwhile, during a major incident, a PSAP may sort text RFEA that generically report the incident itself from isolated cases within the incident where there is a genuine need for individual treatment. APCO confirms ITP's findings, reporting that in numerous recent disaster scenarios in the United States, SMS messages sent over cellular networks were viable while placing voice calls was not.[7]

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[3] *See* Comments of Intrado, Inc. at p. 10, PS Docket Nos. 11-153, 10-255 (December 12, 2011).

[4] *See* CTIA, "Wireless Quick Facts", http://www.ctia.org/advocacy/research/index.cfm/aid/10323. CITA reports that from 2006 to 2011, wireless-only households grew by 19.2% and that the number of active wireless phones in the total US and territorial population, divided by number of people residing therein, is 102.4% as of June 2011.

[5] *See* Comments of the University of Colorado, Interdisciplinary Telecommunications Program at pp. 14-16, PS Docket Nos. 11-153, 10-255 (December 2011).

[6] *See* Id.

[7] *See* Comments of APCO International at pp. 6-7, PS Docket Nos. 11-153, 10-255 (December 12, 2011).

TCS[8] provides further evidence in its analysis of available historical SMS performance in major carrier networks. TCS reports that during normal conditions, 90% of SMS messages are delivered on the first attempt, with success on average within 1.27 attempts. During periods of heavy congestion, SMS messages are delivered on average within 1.42 attempts, which TCS notes is a difference of approximately 10%.[9] TCS notes in its findings that the majority of failed SMS delivery attempts are caused by the target device, such as a mobile phone, being turned off or unavailable, and that failures are generally not caused by the network or SMS itself as a means of delivering text.[10] Note that PSAP CPE would be turned on, available, and connected at all times, and so, success rates are likely to be higher with text-to-9-1-1.

For reasons detailed below in this filing, the industry generally finds that implementing a short-term, comprehensive text-to-9-1-1 system would not support the Commission or the 9-1-1 industry's long-term goals regardless of the merits of reporting RFEA with text. However, certain characteristics of SMS—such as the low bandwidth required to support plain text, the ability to store-and-forward, the ability to automatically retry delivery, and the ability to quickly and efficiently handle generic RFEA—can, and must, be explored as part of any long-term solution included in NG9-1-1 deployment.

3. All stakeholders agree that short-term text-to-9-1-1 services must be targeted towards the deaf and hard-of-hearing.

Industry consensus is that any short-term text-to-9-1-1 solutions must be targeted towards the deaf and hard-of-hearing, and not provided as a service provided to the general public.

The Texas 9-1-1 Alliance ("Alliance") notes that text-to-9-1-1 will not significantly alter the operations of PSAPs today so long as text messages sent to PSAPs are limited, such as to those with disabilities or people who otherwise can't speak but must still place an RFEA. The Alliance notes that, if the general public had the ability to send text messages to 9-1-1 simply for convenience, novelty, or personal preference, there may be a "radically different impact on PSAP operations and workload than occurs today".[11] As noted by the Alliance, the Commission states that a successful text-to-9-1-1 trial in Durham, California was targeted primarily at those with disabilities and those who would not want someone else to hear them placing 9-1-1 calls.[12]

The basic premise—that short short-term text-to-9-1-1 efforts must be targeted towards the deaf and hard-of-hearing—is uniformly echoed throughout filings before the Commission. APCO states that "the only reason that PSAPs may need text capability is to be able to communicate effectively with deaf, hard of hearing or speech

[8] "TCS" to mean "TeleCommunication Systems, Inc".

[9] *See* Comments of TeleCommunication Systems, Inc at pp. 11-13, PS Docket Nos. 11-153, 10-255 (December 2011).

[10] *See* Id.

[11] *See* Comments of Texas 9-1-1 Alliance at p. 8, PS Docket Nos. 11-153, 10-255 (December 2011).

[12] *See* NPRM at ¶44.

impaired individuals or in rare circumstances where voice communications is not possible," clarifying that voice communications is preferable to text for handling nearly all emergency calls, but that text would be valuable to serve a person who has a disability preventing them from having a voice conversation or is under some form of duress preventing the individual from speaking.[13] This sentiment is explicitly supported by national carrier Verizon[14] and is generally implied in a filing by 4G Americas.[15]

TDHH,[16] who generally represents the entire deaf and hard-of-hearing population, also explicitly supports the position that short-term text-to-9-1-1 should be targeted towards the deaf and hard-of-hearing[17]. TDHH references Sweden as a successful case study, noting in that country people with disabilities have used SMS to contact 9-1-1 since 2006.[18]

A review of filings before the Commission representing all sides of this issue, including public safety organizations, national cellular carriers, and the deaf and hard-of-hearing population, clearly shows that the industry supports short-term text-to-9-1-1 solutions only expressly for the purpose of serving the deaf and hard-of-hearing.

4. Comprehensive short-term text-to-9-1-1 solution undermines maturing efforts to develop long-term approaches to text-to-9-1-1 through NG9-1-1 standards development.

Standardization efforts for NG9-1-1 are already underway and are approaching completion. The output of these efforts will be genuine, long-term approaches to NG9-1-1, and with it, text-based RFEA. As such, there is very little utility to a comprehensive short-term solution for text-to-9-1-1. Such a solution is likely to be obsolete before deployment is concluded. Accordingly, commenters have urged the Commission not to consider

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[13] *See* Comments of APCO International at p. 6, PS Docket Nos. 11-153, 10-255 (December 12, 2011).

[14] *See* Comments of Verizon and Verizon Wireless at p. 7, PS Docket Nos. 11-153, 10-255 (December 12, 2011). Verizon states, ". . . any interim solution must be capable of immediate implementation (i.e. during 2012) and limited in duration to bring near-term benefit to individuals with disabilities . . ."

[15] *See* Comments of 4G Americas at pp. 7-8, PS Docket Nos. 11-153, 10-255 (December 2011). 4G Americas recommends that ". . . the Commission instead direct industry and the public safety community to focus on a long-term NG911 solution, while encouraging limited deployment of one of the more promising short-term solutions over a short period of time and/or for a defined subset of users (e.g., individuals with disabilities) before a long-term solution is available."

[16] "TDHH" collectively to mean Telecommunications for the Deaf and Hard of Hearing, inc., Deaf and Hard of Hearing Consumer Advocacy Network, Association of Late-Deafened adults, inc., Deaf Seniors of America, National Association of the Deaf, Hearing Loss Association of America; Cerebral Palsy and Deaf Organization, Communication Service for the Deaf, and California Coalition of Agencies Serving the Deaf and Hard of Hearing, who filed jointly before the Commission.

[17] *See* Comments of TDHH at p. 7, PS Docket Nos. 11-153, 10-255 (December 2011).

[18] *See* Id. at pp 8-9 and *see also* NPRM at ¶¶ 46-47.

mandating public and private industry waste resources on a short-term, nationwide solution for text-to-9-1-1 that serves all users.

As noted by Verizon, service providers are already migrating towards the ability to support NG9-1-1 traffic that can carry text RFEA. Verizon claims that wireless providers in the US are currently deploying all-IP networks (e.g. LTE) that support IP-based text services. Verizon also claims that these services are included in any LTE-capable handset, and that LTE-capable handsets are widespread and affordable.[19] Verizon argues that NENA-compatible NG9-1-1 standards should be ready by the end of 2012 or beginning of 2013, and that commercial deployment of NG9-1-1 could begin in 2015 over a then-established fleet of LTE user and network devices.[20]

4G Americas reports that no current text-based technologies supported over current cellular networks and handsets are appropriate for interim solutions. 4G Americas outlines its study of 10 different techniques identified as candidates for interim text-based solutions for text-to-9-1-1. Among these candidates, 4G Americas did not find a single technology without unacceptable limitations in capability, performance, or impact to users. Of those solutions investigated by 4G Americas, SMS showed "the greatest number of limitations."[21] 4G Americas states that SMS provides no location information of any kind and so may not be routed to the correct PSAP, that SMS messages are easily spoofed, that SMS has no performance guarantees, and that SMS is a store-and-forward instead of real-time service.[22] Many, if not all, of these limitations have already been identified in prior research[23] and were noted in the Commission's NPRM.[24]

AT&T strongly urges in its filing that the Commission should allow existing text-to-9-1-1 trials and ongoing research and standards development to run their courses before taking action. AT&T discourages the Commission and the industry to "[expend] resources on trying to retrofit as a stopgap measure existing texting

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[19] *See* D'Orizio, Dante, "AT&T Announces Pantech Burst and Samsung Exhilerate LTE phones, both cost less than $50", http://www.theverge.com/2012/1/9/2694318/att-pantech-burst-exhilarate-lte-phones-cost-less-50-dollars (January 9, 2012). *See Also* Mills, Adam, "Droid Charge latest 4G LTE phone to see price fall to a penny", http://www.gottabemobile.com/2011/08/26/droid-charge-latest-4g-lte-phone-to-see-price-fall-to-a-penny/ (August 26, 2011). AT&T is currently advertising its newest LTE handsets for sale for $50 with a valid contract and LTE handsets have been sold with heavy discounts for as little as one penny. While the state of Minnesota does not imply endorsement for AT&T, Verizon, or any service provider or manufacturer in particular, these advertisements do support the assertion that LTE handsets are "affordable".

[20] *See* Comments of Verizon and Verizon Wireless at p. 2, PS Docket Nos. 11-153, 10-255 (December 12, 2011)

[21] *See* Comments of 4G Americas at pp. 7-8, PS Docket Nos. 11-153, 10-255 (December 2011).

[22] *See* Id. at 8.

[23] *See* 4G Americas, "Texting to 9-1-1: Examining the design and limitations of SMS", (October 2010). This 76-page report concludes that "there are significant limitations inherent in the design of the current Short Message Services which make it impractical to be used for emergency service."

[24] *See* NPRM at ¶28 and ¶31.

services, which are seriously flawed for providing emergency services access."[25] AT&T describes deficiencies in early rollouts of text-to-9-1-1 programs. In particular, AT&T reports that text-to-9-1-1 services in Sweden did not completely go online until 4 years after original deployment date (deployed in 2006 but completely online in 2010) and have experienced significant technical and operational difficulties. After outlining Sweden's case, AT&T concludes that "the Swedish system took years to develop, is subject to serious limitations, and has a surprisingly low participation rate," and urges the Commission not to base its work off of "limited or incomplete trials."

5. The Commission should not mandate prioritization of 9-1-1 calls in today's cellular networks and should defer to prioritization schemes for RFEA that are currently being addressed by standards bodies.

The majority of today's cellular network and user devices are not properly outfitted to prioritize calls to 9-1-1 over other types of calls. Accordingly, the industry has urged the Commission not to mandate prioritization of 9-1-1 in the near term, but rather to wait until standardization efforts have concluded and make it more reasonable to meet a prioritization mandate. To implement prioritized 9-1-1 calls in the near term would be difficult, if not impossible, would be prohibitively expensive, and would provide a relatively narrow window of benefit.

Filings on behalf of various 9-1-1 organizations assert the importance of prioritizing RFEA over other types of calls. NASNA states that, "if technically feasible, all 9-1-1 calls (both wireline and non-wireline) [should] be prioritized during emergencies to assure that those needing assistance can reach 9-1-1."[26] NENA states that RFEA should receive priority routing and access to network capacity, while recognizing that this prioritization may pre-empt other, non-emergency calls that "nonetheless, have a social benefit," arguing that in many cases the ability to reach a PSAP represents the difference between life and death.[27] APCO asserts that RFEA should be prioritized and provides the analogy that 9-1-1 traffic should be given a "clear lane", just as emergency vehicles are given right-of-way[28] to the detriment of other, legitimate business conducted upon roadways.

However, as noted by Motorola Mobility, Inc, there are many points of potential congestion in a telecommunications network, and prioritization of IP traffic over the network may not be sufficient to prevent blocking of RFEA. Motorola notes that if the congestion occurs over the air in the Radio Access Network (RAN) at cell sites close to an emergency, then prioritization of 9-1-1 traffic in the network wouldn't benefit the caller. In

[25] *See* Comments of AT&T at p. 3, PS Docket Nos. 11-153, 10-255 (December 2011).

[26] *See* Comments of the National Association of State 9-1-1 Administrators at p. 6, PS Docket Nos. 11-153, 10-255 (December 2011).

[27] *See* Comments of the National Emergency Number Association at pg. 27, PS Docket Nos. 11-153, 10-255 (December 2011).

[28] *See* Comments of APCO International at p. 20, PS Docket Nos. 11-153, 10-255 (December 12, 2011).

this case, the caller would not be able to secure a connection in the first place, and so 9-1-1 traffic wouldn't enter the network, and so it wouldn't matter that 9-1-1 traffic were prioritized.[29]

Also as noted by Motorola Mobility, Inc, it is premature to determine or implement a priority access scheme for wireless networks at this time. [30] There are currently efforts within 3GPP to define standardized means of handling emergency calls for LTE systems, but these efforts are not yet finalized.[31] The Commission should wait until standardization efforts have concluded before determining exactly how emergency traffic should be prioritized over cellular networks. Within 3GPP there are already standardization efforts currently underway, but not yet concluded, that would address the Commission's concerns regarding priority access for emergency calls over cellular networks. These efforts would be long-lasting in nature and are a better target for the industry's resources.

Verizon and Verizon Wireless ("Verizon") note that adding support for priority of 9-1-1 calls to current wireless networks would not only require substantial upgrades to cellular networks but would require upgraded or new user devices as well. Verizon claims that it would be unreasonably burdensome to implement the technology changes required to allow current networks to both detect when a user is attempting to dial 9-1-1 and simultaneously interrupt any non-emergency calls in progress in order to provide access for the 9-1-1 caller. Verizon notes that prioritization schemes are technically feasible in future in all-IP cellular networks such as its own LTE network. Verizon states that it does indeed plan to prioritize voice traffic in general, although Verizon does not state it intends to prioritize 9-1-1 voice traffic specifically over other voice traffic. [32]

NENA notes that LTE and IMS-based networks have the capability to prioritize traffic on a per-session basis. NENA then states that, as the nation completes its transition from the PSTN to IP-based communications, that the costs of prioritization of 9-1-1 calls over other traffic should decrease, and advises the Commission to consider this trend in evaluating which networks must prioritize 9-1-1 traffic and when they must do so.[33]

6. NG9-1-1 deployment should be governed at a state or regional level by 9-1-1 authorities.

Those commenting on the appropriate level of governance for NG9-1-1 deployment concur that a state or region representing a 9-1-1 authority should bear responsibility for NG9-1-1 deployment.

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[29] *See* Comments of Motorola Mobility, Inc. at 7, PS Docket Nos. 11-153, 10-255 (December 2011).

[30] *See* Id. at p. 8.

[31] *See* 3GPP TR 22.871 v11.3.0, "Study on Non-Voice Emergency Services (Release 11), September 2011 and 3GPP TS 23.167 v9.7.0, "IMS Emergency Sessions (Release 9) and "Support for IP-based IMS Emergency Calls over General Packet Radio Service and Evolved Packet Service (Release 9), March 2009.

[32] *See* Comments of Verizon and Verizon Wireless at pp. 20-22, PS Docket Nos. 11-153, 10-255 (December 12, 2011)

[33] *See* Comments of the National Emergency Number Association at pp. 21-22, PS Docket Nos. 11-153, 10-255 (December 2011).

For example, NASNA states in its filing that states or regions with central decision-making authority should have autonomy in governing NG9-1-1 deployment.[34] King County similarly argues that NG9-1-1 deployment should be governed at a regional level defined by the scope of a 9-1-1 authority.[35] Several commenters urge the Commission to defer to state or local entities to manage the specifics of individual NG9-1-1 rollouts while calling for the Federal government and national entities to provide support through funding, endorsement of relevant standards, public awareness, and general coordination.[36]

Minnesota supports the position that NG9-1-1 should be governed at a state or regional level determined based on the scope of individual 9-1-1 authorities. Minnesota has a statewide 9-1-1 authority housed under its Department of Public Safety, which is currently in the midst of executing the transition of the state's circuit-based 9-1-1 network to an IP-based NG9-1-1 network. This network will be capable of accepting legacy 9-1-1 calls and NG9-1-1 RFEA and will serve over 100 primary and secondary PSAPs throughout the state. It is the experience of Minnesota that a 9-1-1 authority, in this case at the state level, is best-positioned to manage the implementation of an NG9-1-1 network while remaining cognizant and responsive to the needs of individual PSAPs and local units of government.

Respectfully Submitted,

Jackie Mines, Director

Minnesota Department of Public Safety
Division of Emergency Communication Networks

[34] *See* Comments of the National Association of State 9-1-1 Administrators at p. 7, PS Docket Nos. 11-153, 10-255 (December 2011).

[35] *See* Comments of the King County 9-1-1 program at pg. 7, PS Docket Nos. 11-153, 10-255 (December 2011).

[36] *E.g.*, Id., Comments of Motorola Mobility, Inc. at pg. 4, Comments of CTIA at pg. 15, PS Docket Nos. 11-153, 10-255 (December 2011).